

## **WHAT IS CLAIMED IS:**

1. A method of promoting skin regeneration comprising:
  - a) identifying compounds expressed by fetal tissues that promote skin regeneration, and
  - b) applying to skin of a mammal a composition comprising one or more compounds expressed by fetal tissues.
2. The method of claim 1 wherein the compounds expressed by fetal tissue are selected from the group consisting of natural compounds derived from fetal tissues, compounds produced by recombinantly expressing the compounds expressed by fetal tissues in genetically engineered cells, and combinations thereof.
3. A method of promoting skin regeneration comprising:
  - a) comparing compounds expressed by adult tissue and compounds expressed by fetal tissues,
  - b) identifying compounds with higher expression in adult tissues,
  - c) identifying compounds that block the expression of the compounds with higher expression in adult tissues and designating the compounds that block the expression of the compounds with higher expression in adult tissues as blocking compounds, and
  - d) applying a composition comprising one or more of the blocking compounds to skin of a mammal,  
wherein the blocking compounds are selected from the group consisting of naturally derived compounds, recombinantly produced compounds, and combinations thereof.
4. A cosmetic, pharmaceutical, or dermatological skin care composition comprising compounds expressed by fetal tissues and a dermatologically or pharmaceutically acceptable carrier.
5. The skin care composition of claim 4 wherein the compounds expressed by fetal tissues are selected from the group consisting of natural compounds derived from fetal tissues, compounds produced by recombinantly expressing

the compounds expressed by fetal tissues in genetically engineered prokaryotic or eukaryotic cells, and combinations thereof.

6. The skin care composition of claim 5 wherein the compounds expressed by fetal tissues are in a form selected from the group consisting of cell lysates, extracts, media, and combinations thereof.

7. The skin care composition of claim 5 wherein the compounds expressed by fetal tissues are selected from the group consisting of partially purified compounds, individually purified compounds, and combinations thereof.

8. The skin care composition of claim 5 wherein the compounds expressed by fetal tissues are first genetically modified prior to recombinant expression in genetically engineered prokaryotic or eukaryotic cells.

9. The skin care composition of claim 4 in a formulation selected from the group consisting of a solution, a lotion, an ointment, a cream, and combinations thereof.

10. The skin care composition of claim 4 wherein the dermatologically or pharmaceutically acceptable carrier is selected from the group consisting of a woven patch, a non-woven patch, a liposomal delivery vehicle, and combinations thereof.

11. The skin care composition of claim 4 further comprising an ingredient selected from the group consisting of hyaluronic acid, lactose-1-phosphate, maltose-1-phosphate, mannose-6-phosphate, and lactose-6-phosphate, and combinations thereof.

12. The skin care composition of claim 4 further comprising an additional skin care active selected from the group consisting of desquamatory actives, anti-acne actives, retinoids, peptides, polypeptides, nucleic acids, growth factors, cytokines, hydroxy acids, anti-oxidants, radical scavengers, chelators, anti-inflammatory agents, topical anesthetics, tanning actives, skin lightening agents, anti-cellulite agents, flavonoids, antimicrobial actives, skin soothing agents, skin healing agents, antifungal actives, sunscreen actives, conditioning agents, structuring agents, thickening agents, and mixtures thereof.

13. A cosmetic, pharmaceutical, or dermatological skin care composition comprising:
- a) from about 0.000000001% to about 10% by weight of individually purified compounds expressed by fetal tissues;
  - b) about 1% to about 80% by weight of non-purified or partially purified compounds expressed by fetal tissues in enriched lysates, extracts, or media;
  - b) from about 0.1% to about 10% by weight of hyaluronic acid;
  - c) from about 0.000001% to about 10% by weight of at least one additional skin care active including lactose-1-phosphate, maltose-1-phosphate, mannose-6-phosphate, and lactose-6-phosphate; and
  - d) a dermatologically or pharmaceutically acceptable carrier.
14. The skin care composition of claim 13 further comprising vesicular delivery systems.
15. A method of promoting skin regeneration comprising applying to skin of a mammal a composition comprising an effective amount of a small leucine rich proteoglycan compound selected from the group consisting of fibromodulin (FM), lumican, decorin, biglycan, and combinations thereof, wherein the skin of a mammal is in the absence of a dermal wound.
16. The method of claim 15 wherein the skin of a mammal is non-intact, epidermally injured skin.
17. A cosmetic, pharmaceutical, or dermatological skin care composition that promotes the regeneration of skin of a mammal, comprising an effective amount of a proteoglycan compound selected from the group consisting of FM, lumican, decorin, biglycan, and combinations thereof, wherein the skin of a mammal is in the absence of a dermal wound.
18. The skin care composition of claim 17 further comprising a cosmetically, dermatologically or pharmaceutically acceptable carrier.
19. The skin care composition of claim 17 wherein the proteoglycan compound is selected from the group consisting of a natural proteoglycan compound, a recombinant proteoglycan compound, and combinations thereof.

20. The skin care composition of claim 17 wherein the skin is non-intact, epidermally injured skin.
21. The skin care composition of claim 18 wherein the skin is non-intact, epidermally injured skin.
22. The skin care composition of claim 19 wherein the skin is non-intact, epidermally injured skin.
23. The skin care composition of claim 17 comprising:
- a) from about 0.0001% to about 10% by weight of the proteoglycan compound which is purified, and about 0.1% to about 80% by weight of a cell lysate, extract, or media enriched with the proteoglycan compound;
  - b) from about 0.1% to about 10% by weight of hyaluronic acid;
  - c) from about 0.000001% to about 10% by weight of at least one additional skin care active; and
  - d) a carrier selected from the group consisting of a dermatologically acceptable carrier, a pharmaceutically acceptable carrier, a vesicular delivery system, and combinations thereof.
24. The skin care composition of claim 19 comprising:
- a) from about 0.0001% to about 10% by weight of the proteoglycan compound which is purified, and about 0.1% to about 80% by weight of a cell lysate, extract, or media enriched with the proteoglycan compound;
  - b) from about 0.1% to about 10% by weight of hyaluronic acid;
  - c) from about 0.000001% to about 10% by weight of at least one additional skin care active; and
  - d) a carrier selected from the group consisting of a dermatologically acceptable carrier, a pharmaceutically acceptable carrier, a vesicular delivery system, and combinations thereof.
25. The skin care composition of claim 20 comprising:
- a) from about 0.0001% to about 10% by weight of the proteoglycan compound which is purified, and about 0.1% to about 80% by weight of a cell lysate, extract, or media enriched with the proteoglycan compound;
  - b) from about 0.1% to about 10% by weight of hyaluronic acid;

c) from about 0.000001% to about 10% by weight of at least one additional skin care active; and

d) a carrier selected from the group consisting of a dermatologically acceptable carrier, a pharmaceutically acceptable carrier, a vesicular delivery system, and combinations thereof.

26. The skin care composition of claim 21 comprising:

a) from about 0.0001% to about 10% by weight of the proteoglycan compound which is purified, and about 0.1% to about 80% by weight of a cell lysate, extract, or media enriched with the proteoglycan compound;

b) from about 0.1% to about 10% by weight of hyaluronic acid;

c) from about 0.000001% to about 10% by weight of at least one additional skin care active; and

d) a carrier selected from the group consisting of a dermatologically acceptable carrier, a pharmaceutically acceptable carrier, a vesicular delivery system, and combinations thereof.

27. The skin care composition of claim 22 comprising:

a) from about 0.0001% to about 10% by weight of the proteoglycan compound which is purified, and about 0.1% to about 80% by weight of a cell lysate, extract, or media enriched with the proteoglycan compound;

b) from about 0.1% to about 10% by weight of hyaluronic acid;

c) from about 0.000001% to about 10% by weight of at least one additional skin care active; and

d) a carrier selected from the group consisting of a dermatologically acceptable carrier, a pharmaceutically acceptable carrier, a vesicular delivery system, and combinations thereof.

28. A method of modulating skin conditions comprising a step selected from the group consisting of:

a) promoting collagen organization,

b) modulating skin inflammatory conditions,

c) modulating skin pigmentation, and

d) combinations thereof.

29. The method of claim 28 comprising modulating the level of a compound selected from the group consisting of small leucine rich proteoglycans (SLRPs), glycosaminoglycans (GAGs), and combinations thereof.
30. The method of claim 28 wherein the SLRPs are selected from the group consisting of FM, lumican, decorin, biglycan, and combinations thereof, and wherein the GAGs are selected from the group consisting of dermatan sulfate, chondroitin sulfate, keratan sulfate, and combinations thereof.
31. The method of claim 30 wherein the SLRPs are selected from the group consisting of FM, lumican, decorin, biglycan, and combinations thereof, the level of which is modulated by applying to the skin a composition comprising an effective amount of one or more of the SLRPs.
32. The method of claim 28 wherein the skin of mammal is intact
33. The method of claim 30 wherein the skin of mammal is intact.
34. The method of claim 30 wherein the skin of mammal is intact.
35. The method of claim 28 wherein the skin of mammal is non-intact, epidermally injured skin.
36. The method of claim 30 wherein the skin of mammal is non-intact, epidermally injured skin.
37. The method of claim 31 wherein the skin of mammal is non-intact, epidermally injured skin.
38. The method of claim 30 wherein the SLRPs are selected from the group consisting of FM, lumican, decorin, biglycan, and combinations thereof and modulate collagen fibrillogenesis in non-intact, dermally injured skin.
39. The method of claim 30 wherein the level of the dermatan sulfate, chondroitin sulfate, keratan sulfate, and combinations thereof is modulated by applying to the skin a composition comprising one or more enzymes that modulate collagen fibrillogenesis and interfibrillar spacing.
40. The method of claim 30 wherein the level of the dermatan sulfate, chondroitin sulfate, keratan sulfate, and combinations thereof is modulated by applying to the skin a composition comprising one or more enzymes that modulate unorganized matrix deposition by fibroblasts.

41. The method of claim 39 wherein the enzymes are selected from the group consisting of chondroitinase AC, chondroitinase B, endo-beta-galactosidases, keratanase, keratanase II, Bc keratanase II, and combinations thereof.

42. The method of claim 40 wherein the enzymes are selected from the group consisting of chondroitinase AC, chondroitinase B, endo-beta-galactosidases, keratanase, keratanase II, Bc keratanase II, and combinations thereof.

43. The method of claim 28, comprising modulating skin inflammatory conditions,

wherein the skin inflammatory conditions are selected from the group consisting of non-allergic skin inflammatory conditions, allergic skin inflammatory conditions, neurogenic skin inflammatory conditions, UV radiation (UVR) induced skin inflammatory conditions, miscellaneous skin inflammatory conditions, and combinations thereof.

44. The method of claim 30, comprising modulating skin inflammatory conditions or modulating skin pigmentation,

wherein the modulation of the level of FM, lumican, decorin, and/or biglycan modulates TNF-alpha activity.

45. The method of claim 30, comprising modulating skin inflammatory conditions or modulating skin pigmentation,

wherein the modulation of the level of dermatan sulfate modulates leukocytosis.

46. The method of claim 45 wherein the level of dermatan sulfate is modulated by chondroitinase B.

47. The method of claim 30, comprising modulating skin pigmentation, wherein the modulation of the level of dermatan sulfate modulates melanocyte proliferation.

48. The method of claim 30 comprising modulating skin pigmentation,

wherein the level of the dermatan sulfate, chondroitin sulfate, keratan sulfate, and combinations thereof is modulated by applying to the skin a composition comprising one or more enzymes.

49. The method of claim 47 wherein the enzymes are selected from the group consisting of chondroitinase AC, chondroitinase B, endo-beta-galactosidases, keratanase, keratanase II, Bc keratanase II, and combinations thereof.

50. The method of claim 30 by modulating skin pigmentation, wherein the modulation of the level of a SLRP selected from the group consisting of FM, lumican, decorin, biglycan and combinations thereof modulates bFGF activity.

51. The method of claim 30 by modulating skin pigmentation, wherein the modulation of the level of a SLRP selected from the group consisting of FM, lumican, decorin, biglycan and combinations thereof modulates melanocyte proliferation.

52. The method of claim 30 by modulating skin pigmentation, wherein the modulation of the level of a SLRP selected from the group consisting of FM, lumican, decorin, biglycan and combinations thereof modulates melanocyte melanin production.

53. The method of claim 30 by modulating skin pigmentation, wherein the modulation of the level of a SLRP selected from the group consisting of FM, lumican, decorin, biglycan and combinations thereof modulates stem cell factor.